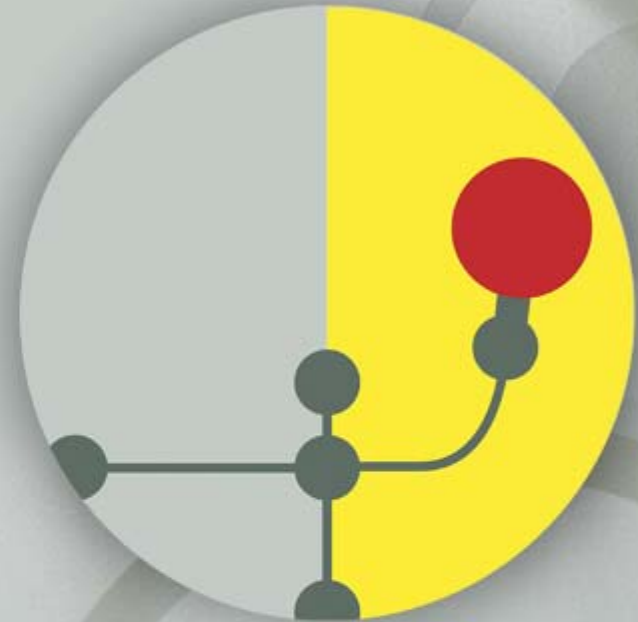


# Simpler Networks Portfolio Overview



# Agenda



- **Simpler Networks Mission and Strategy**
- **CO and Outdoor Plant Automation Market Drivers**
- **Product Overview**
  - CO Applications – EZ-MDF
  - Architecture and MEMS technology overview
  - Outdoor Applications - EZ-EDGE

# Simpler Networks' Mission



## Redefining Flow-Through

- Remove the last bottleneck to automation of broadband services
  - Automate 100% of jumper activity
- Provide automated testing and provisioning of all services over copper plant
- Ensure **Zero Touch Operations**



# Market Drivers (1)



## European pull from all service providers

- Deregulation + BB growth raises PTT OPEX
  - Significant OPEX reduction key to PTT competitiveness
  - Automation has the attention of top management (T-COM, BT, FT, KPN, TI ...)
- Copper infrastructure remains the prime service delivery vehicle
  - LLU OLO pressure at CO where Cable Co presence is weak (BT, FT, TI, T-COM)
  - Outdoor battleground where Cable Co's are strong (KPN, Belgacom)
- European PTTs are joining forces on ADF specification
  - TI-led RFI for outdoor ADF (Austria, Belgacom, BT, FT, KPN, PT, Telefonica)
- Migration to IP creates copper plant integrity management gap
  - Loss of metallic test access forces introduction of Test Access Matrix (TAM)
  - ADF with built-in TAM makes MDF automation business case attractive

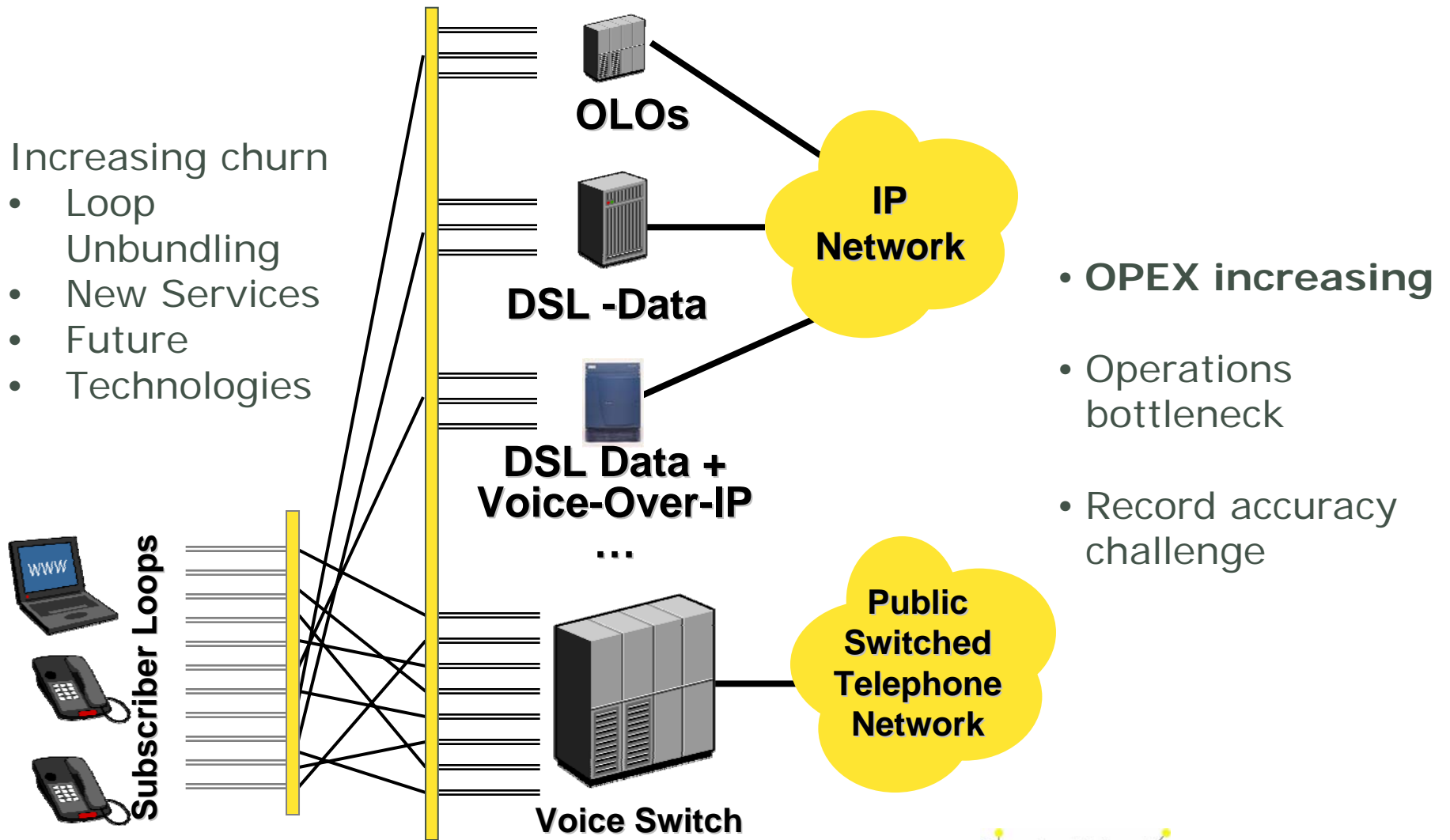
**Simpler's focus is aligned to European market pull**

# Product Overview



- **Product Overview outline**
  - **CO Applications – EZ-MDF**
  - Architecture and MEMS technology overview
  - Outdoor Applications - EZ-EDGE

# Recent Trends Aggravate Problem



Increasing churn

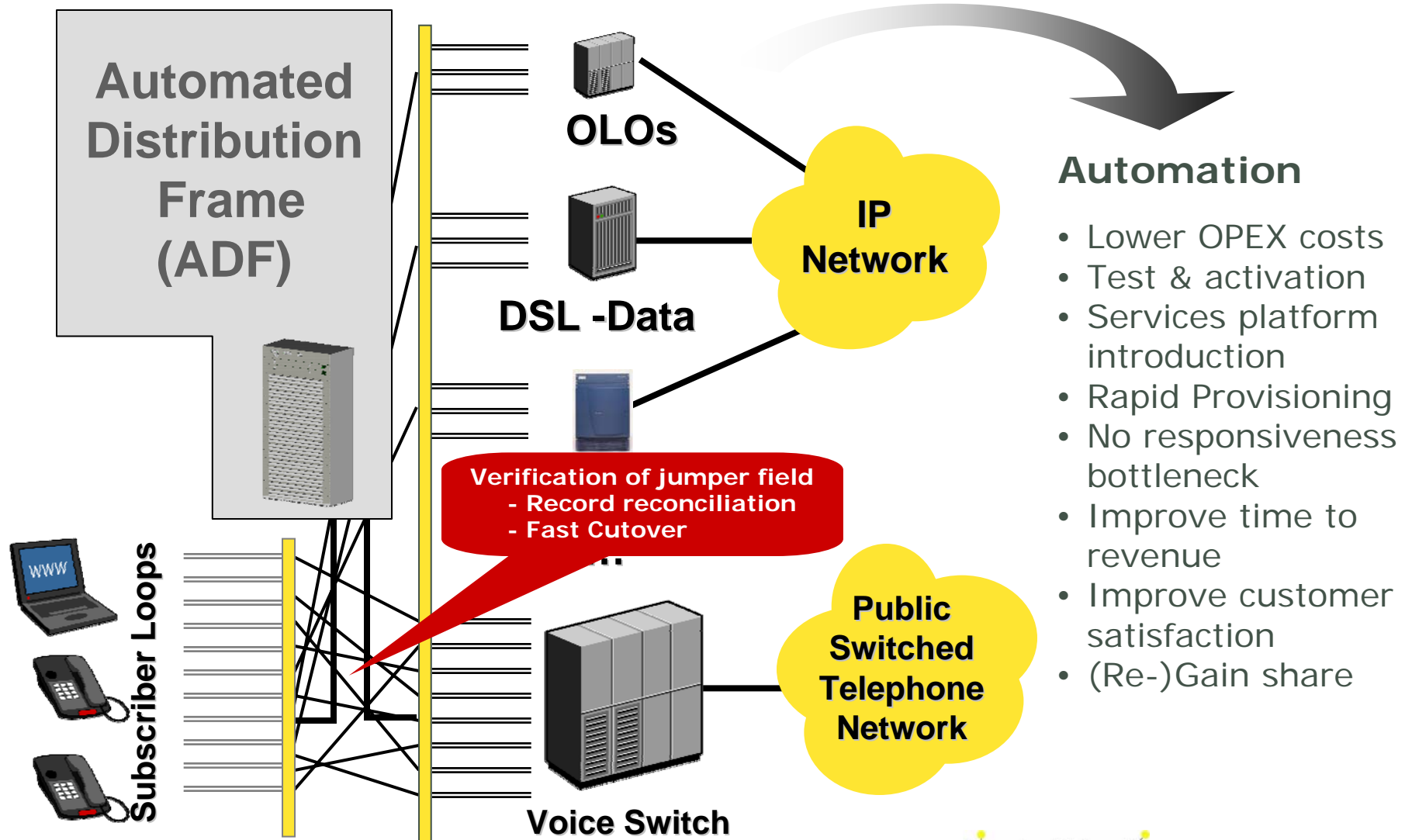
- Loop Unbundling
- New Services
- Future Technologies

- **OPEX increasing**

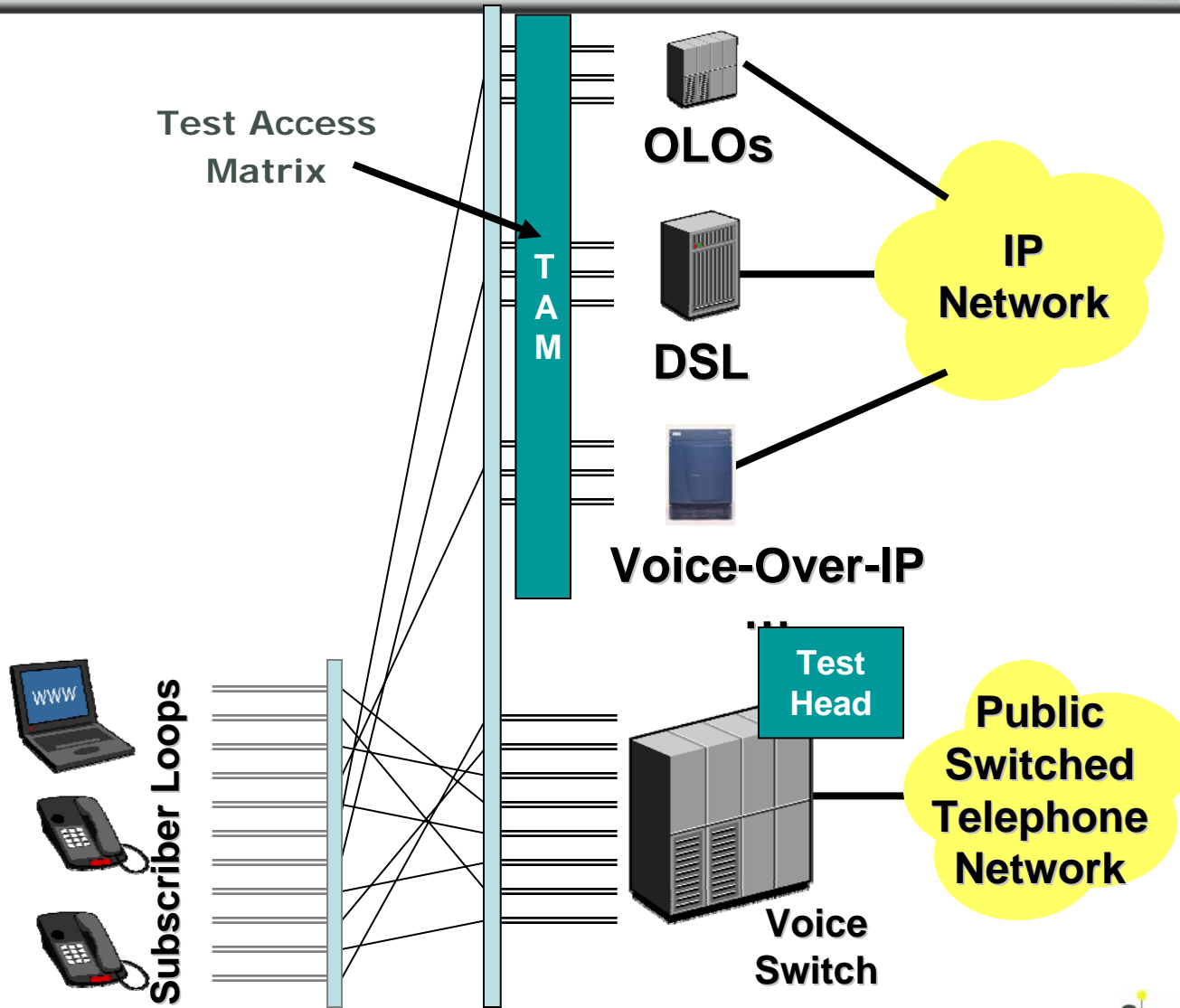
- Operations bottleneck

- Record accuracy challenge

# CO ADF-The Automated Solution



# Enabling Metallic Test Access



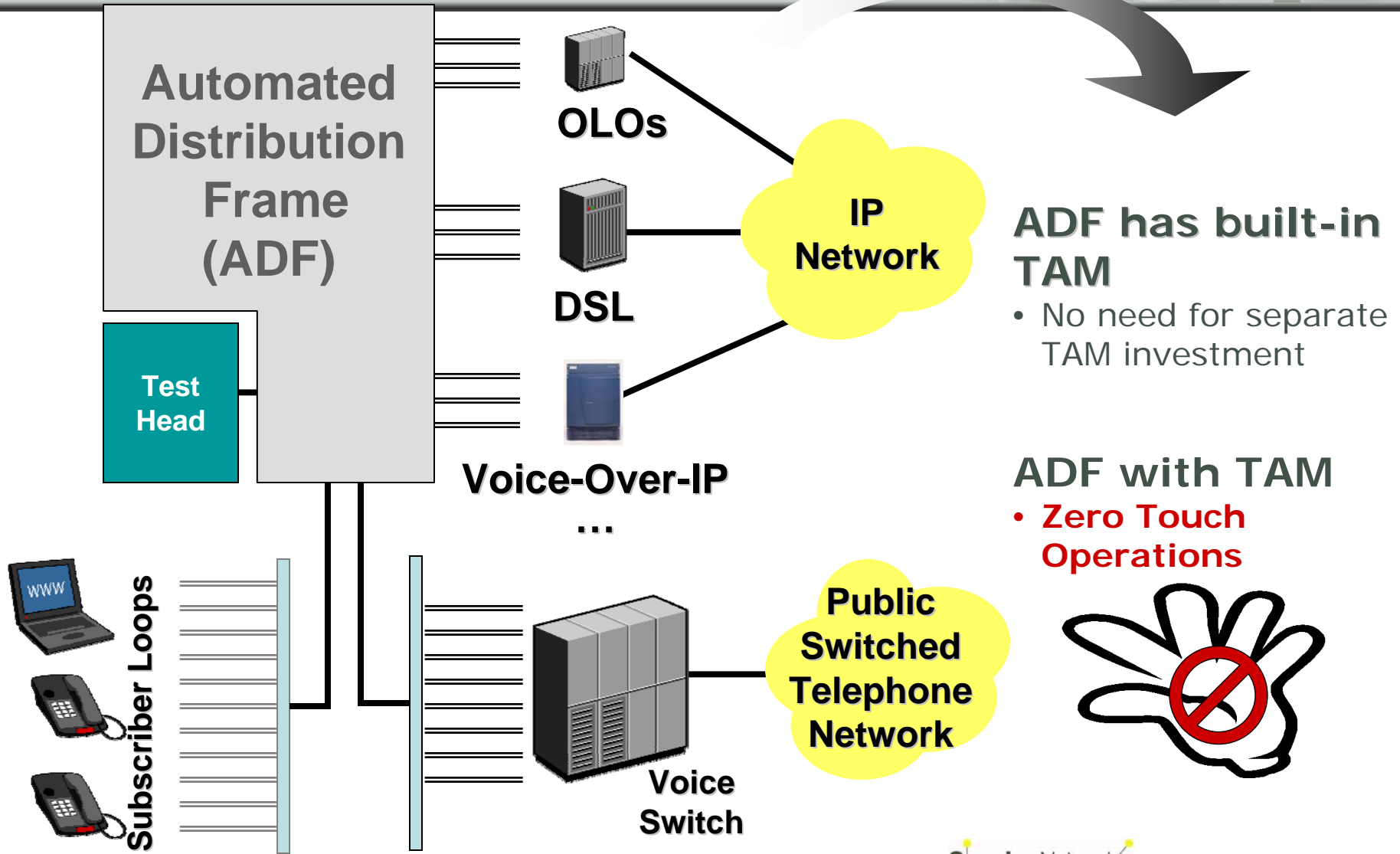
## Traditional Test Arrangement

- Lines equipped with DSL filters difficult to test
- VoIP lines are impossible to test (no connection to PSTN switch)
- Regulator requires incumbent or copper owner to provide test results

**TAM investment pressure**

# Enabling Metallic Test Access (2)

## The Automated Solution



**ADF has built-in TAM**

- No need for separate TAM investment

**ADF with TAM**

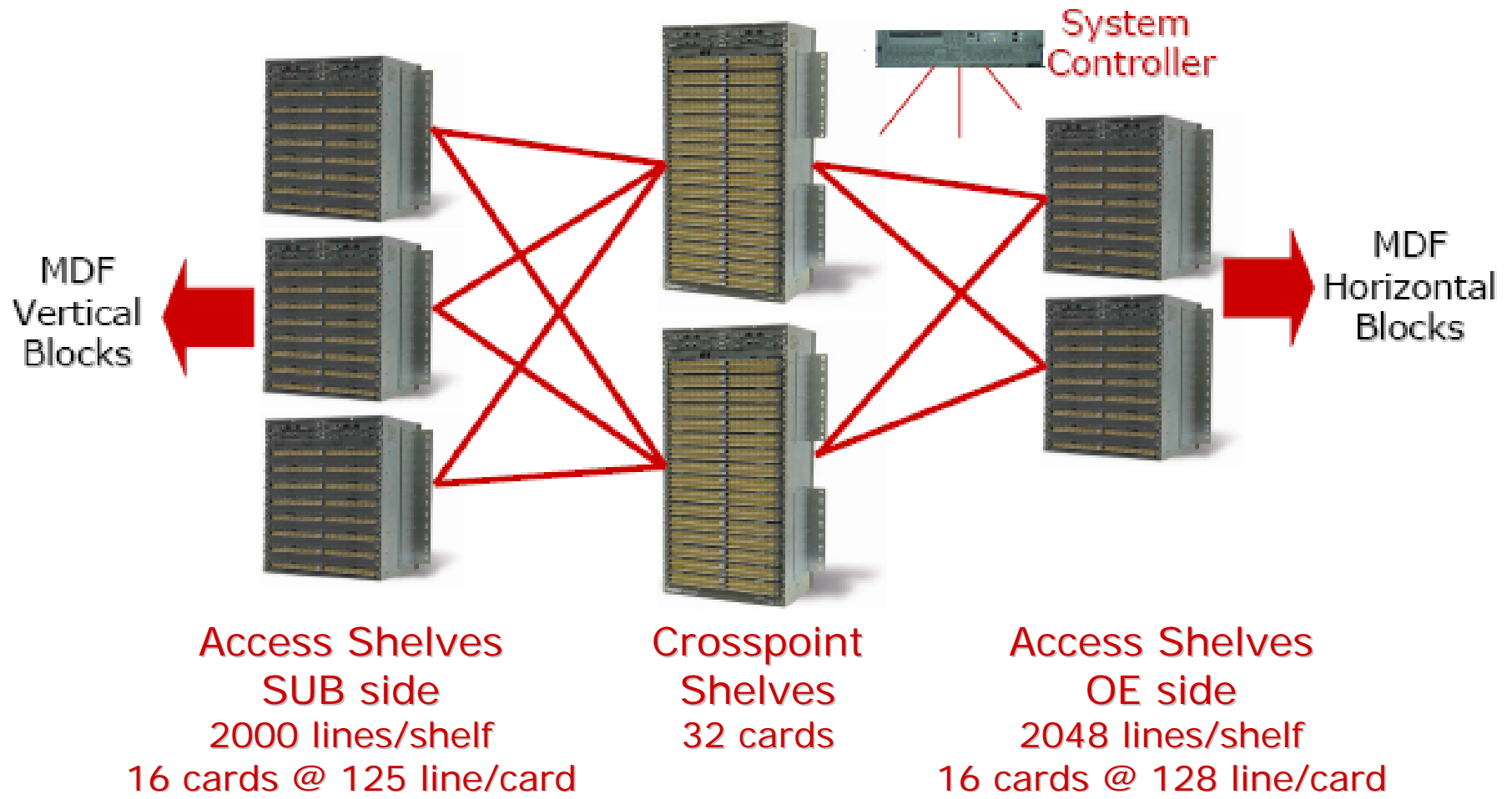
- **Zero Touch Operations**



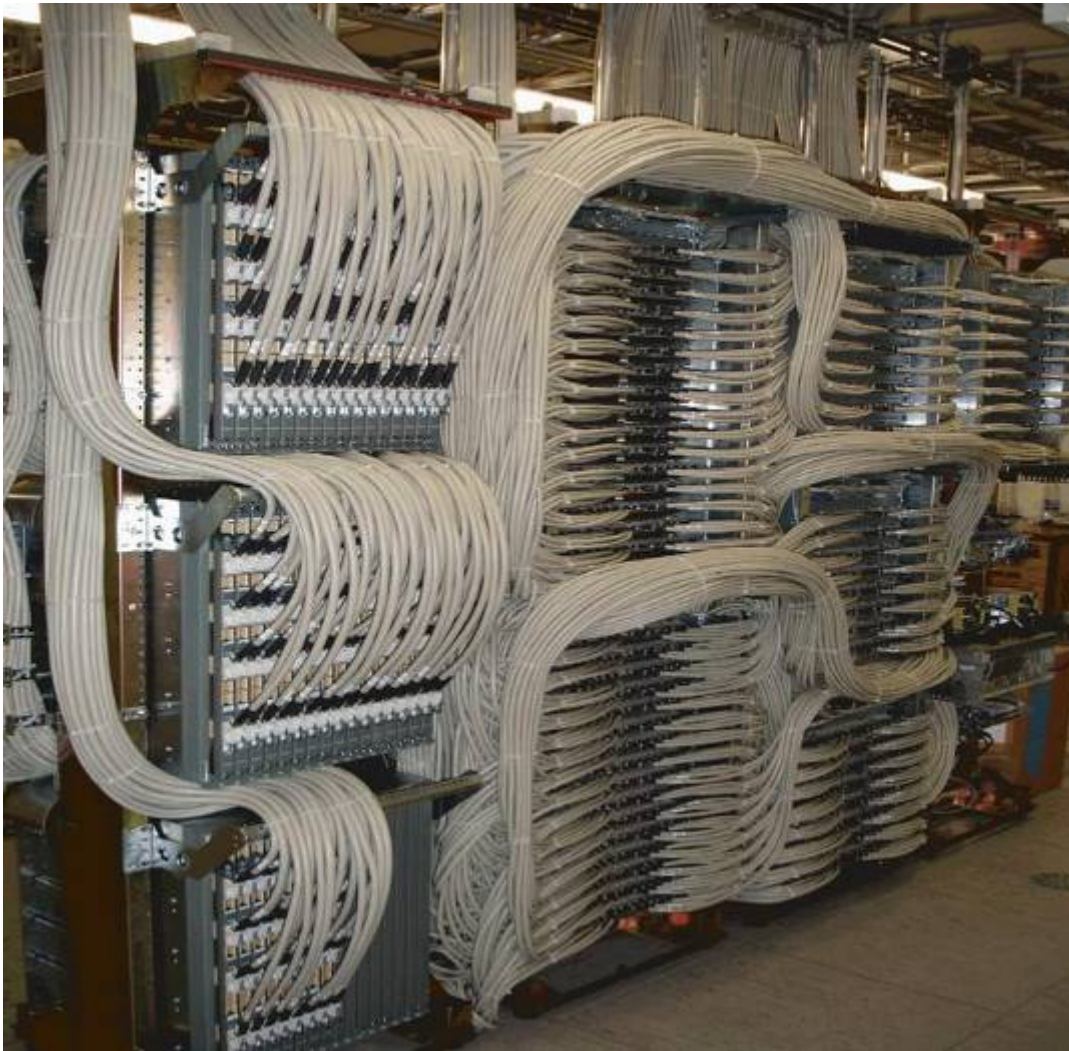
# CO Application EZ-MDF Building Blocks



## Non-Blocking Any-to-Any Scalable Architecture



# EZ-MDF in the field



EZ-MDF 100 12K system shown  
7,500 x 5,120 ports equipped

# EZ-FLOW for Centralized Operations



**TL1 Management System (e.g. NMA)**



**TL1**

**Provisioning OSS (e.g. FOMS)**



**Web Enabled Client**



**HTTP**



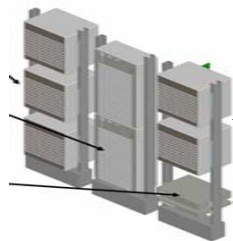
**Web Browser**

**EZ-FLOW SUN Fire Server**

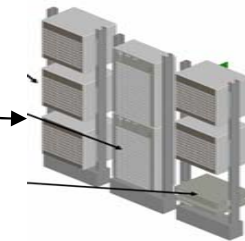


**TL1**

**TL1**



**EZ-MDF**



**EZ-MDF**

**TL1**

**EZ-MDF**

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# Product Overview



- **Product Overview outline**
  - CO Applications – EZ-MDF
  - **Architecture and MEMS technology overview**
  - Outdoor Applications - EZ-EDGE

# Core technologies



- ❑ The EZ-MDF and EZ-Edge are both based on the same core technologies:
  - Custom multi-stage clos network architecture.
  - MEMS micro-relay technology based on thermal activation.

# MEMS Relay Advantages



**MEMS**

Micro Electro-Mechanical System

## Best Telecom Relay

- 200x smaller
- More cost effective

## Uses Proven Manufacturing Techniques

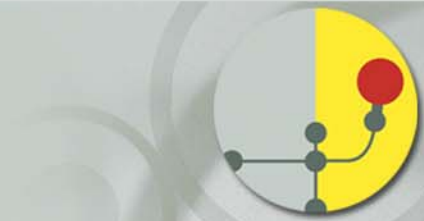
## Low Power Consumption

- **Latching**: retains its state in event of power loss

## Future Proof:

- Handles all frequencies/voltages for different telecom services

# Product Overview



- **Product Overview outline**

- CO Applications – EZ-MDF
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- **Outdoor Applications - EZ-EDGE**

# Setting the context...



**Legacy** → **Today** → **Future**

**Services**

Voice	Data	VoIP	Video (streaming)	Hi-Fi Audio	VoD/IPTV Video Conf
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**Medium**

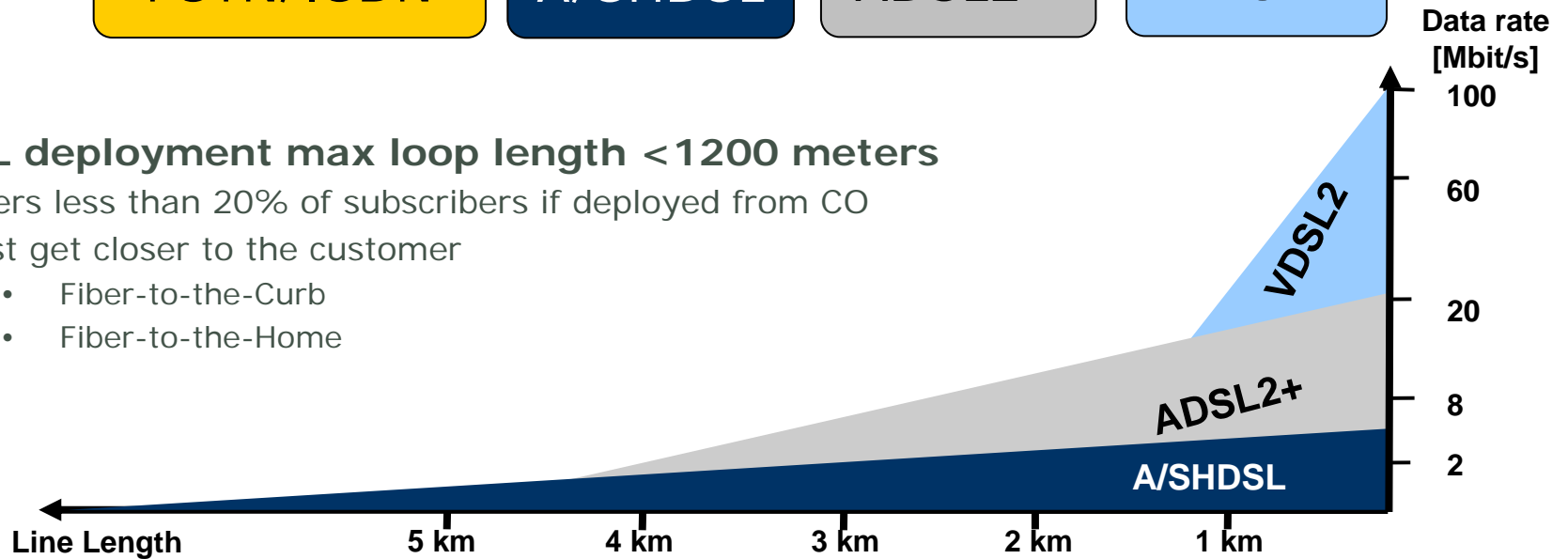
Cu – Twisted Pair

**Technologies**

PSTN/ISDN	A/SHDSL	ADSL2+	VDSL2
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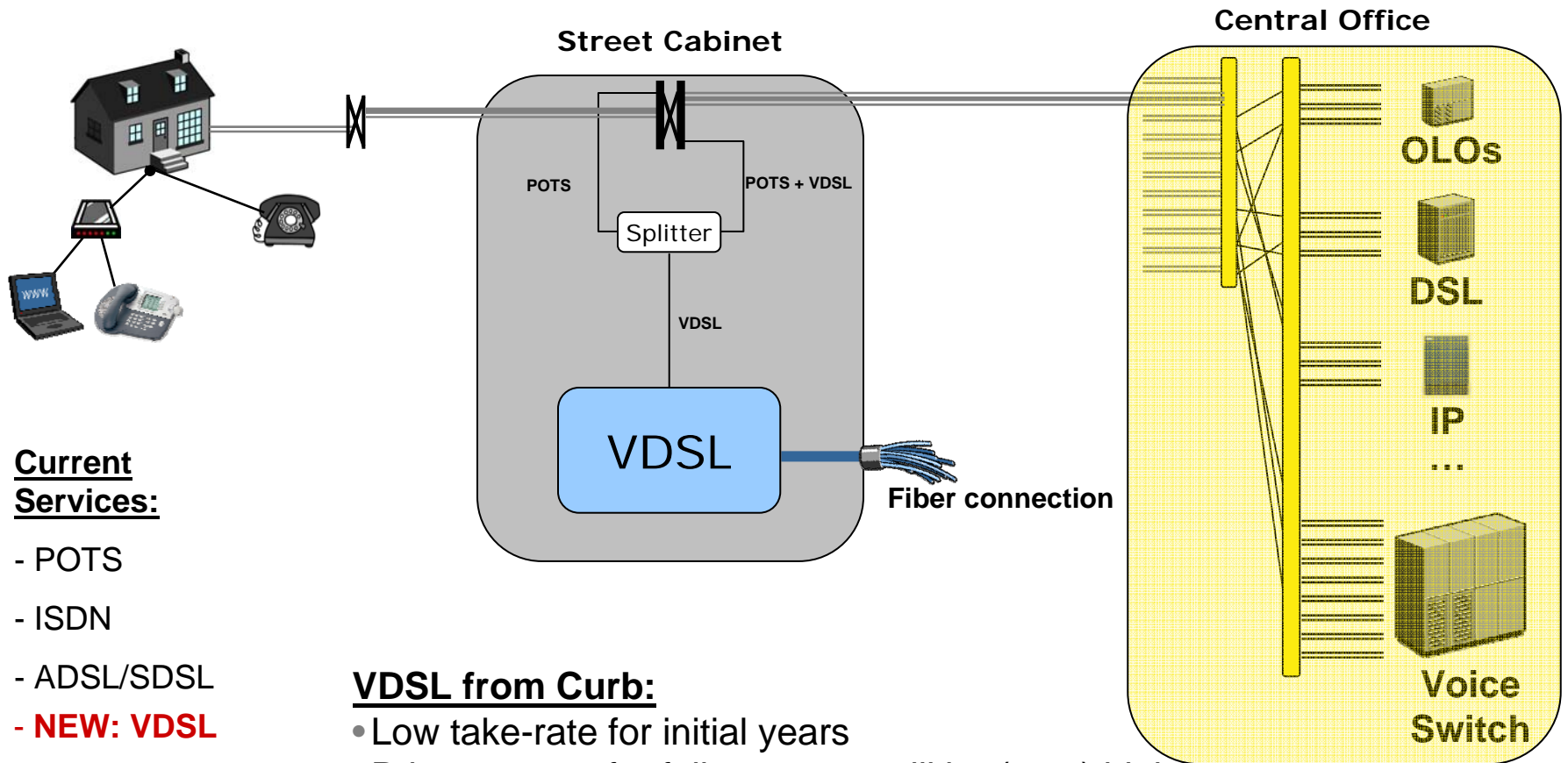
**For VDSL2 deployment max loop length < 1200 meters**

- covers less than 20% of subscribers if deployed from CO
- must get closer to the customer
  - Fiber-to-the-Curb
  - Fiber-to-the-Home



# Street cabinet application

*New VDSL services deployed closer to customer*



## Current Services:

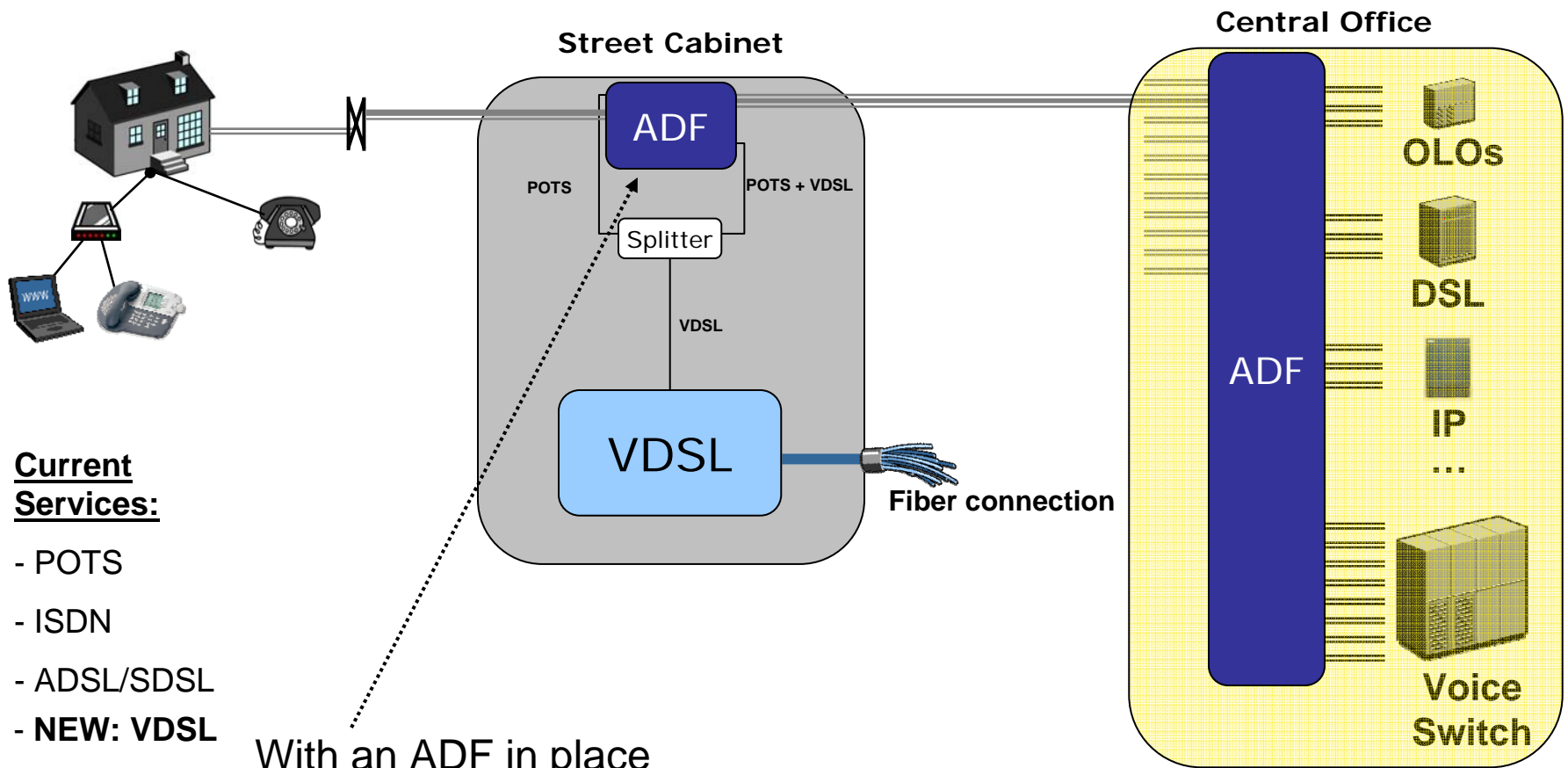
- POTS
- ISDN
- ADSL/SDSL
- **NEW: VDSL**

## VDSL from Curb:

- Low take-rate for initial years
- Price per port for full coverage will be (very) high incl. ongoing expenses for CO based systems
- Flexibility is required for OPEX/CAPEX reduction and connectivity

# Street cabinet application

New VDSL services deployed closer to customer



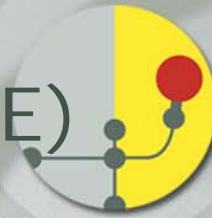
## Current Services:

- POTS
- ISDN
- ADSL/SDSL
- **NEW: VDSL**

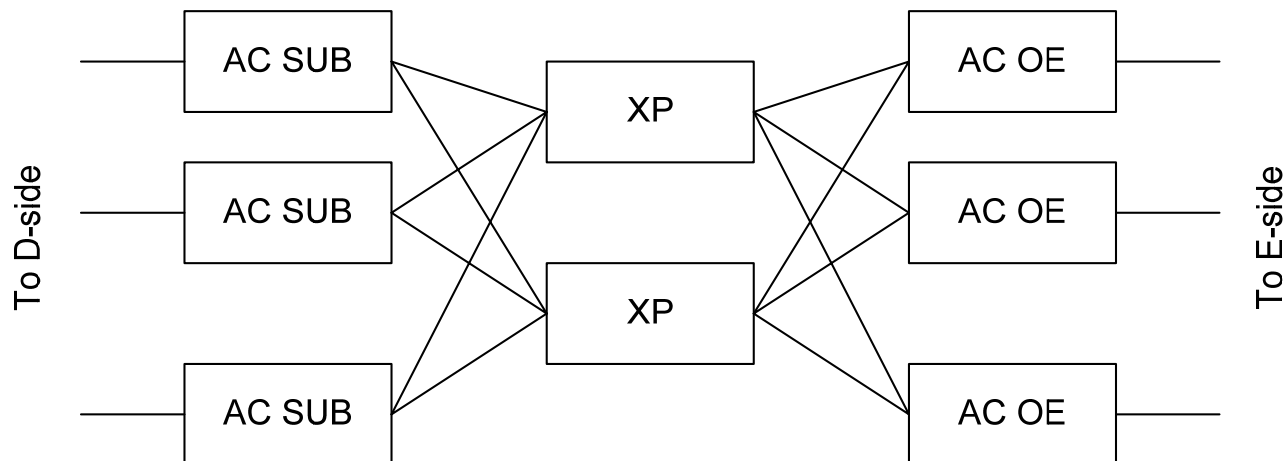
With an ADF in place

- All active lines positioned for Broadband with minimum CAPEX
- Schedule DSLAM additions based on take rate
- Fast remote provisioning eliminates OPEX barrier
- Remote line testing for faster problem resolution

# Approach to Street Cabinet (EZ-EDGE)

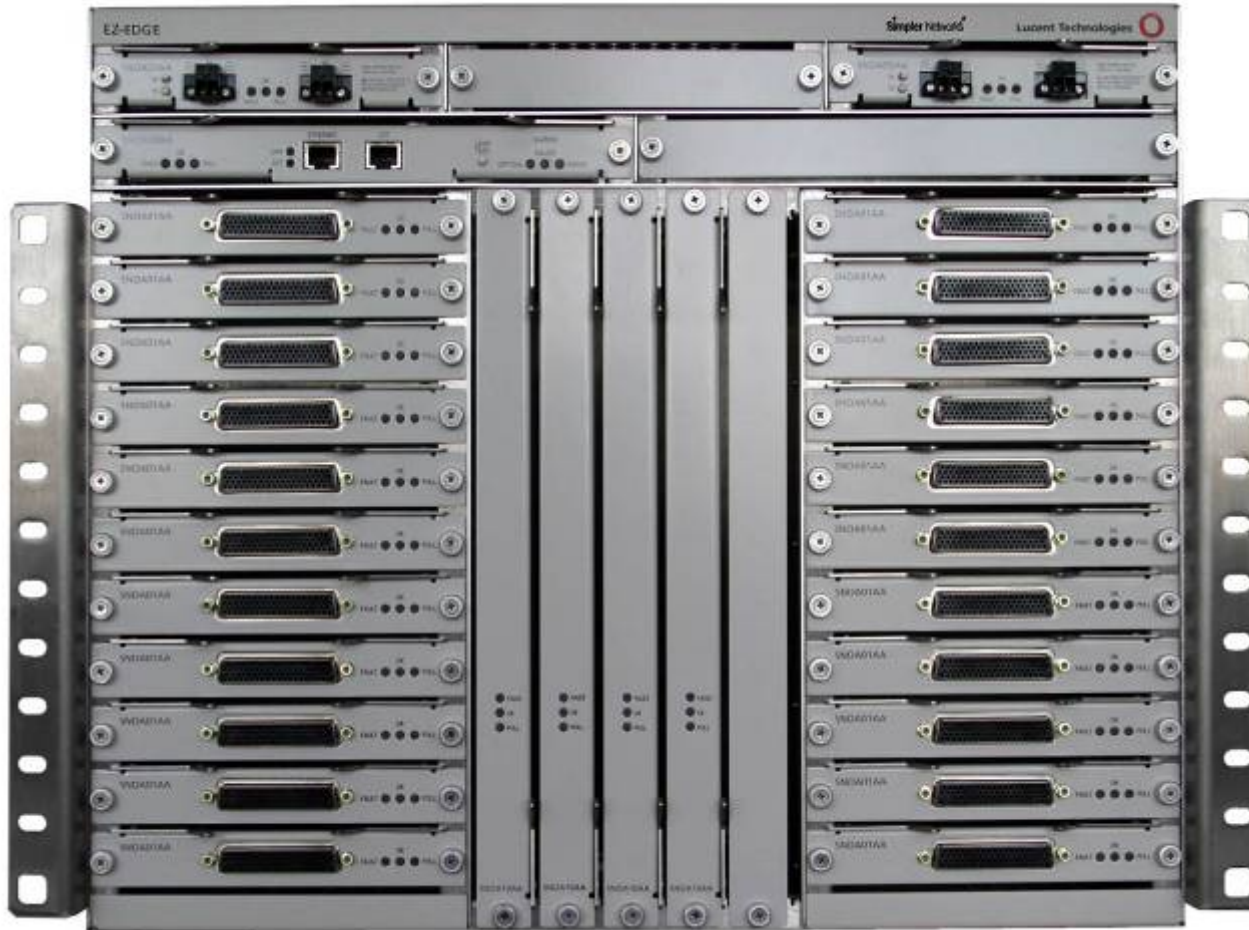


- ❖ Any-to-Any non-blocking solution
- ❖ Repackage same core technologies and architecture as the current EZ-MDF product.
  - ✓ MEMS Base Relay
  - ✓ Custom Clos Network Architecture
- ❖ Hardening to outside plant environment
- ❖ Same Building Block Structure as the EZ-MDF.



# EZ-EDGE 352 x 352

*Simpler Networks 1<sup>st</sup> street cabinet product*



## **Any-to-any**

- Non-blocking

## **Modular Access**

- 32-port increment
- One Access card type

## **4-wire Test access (optional)**

- Access to all terminated pairs

## **Maintainability**

- Mirror slots to "program" replacement cards
- Redundant power (optional)

HxBxT: 400x483x224 mm

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# EZ-Solutions Summary



## **Increase Speed of Service Provisioning**

- Automate the cross-connect function in the Central Office / Street side cabinet
- Integrate line testing
- Seamless (no touch) provisioning/automated loop management

## **Decrease Costs of Service Provisioning**

- Eliminate truck rolls for cross-connects & testing
- Reduce need for craft interface to provisioning Systems
- Loop testing and provisioning from centralized NOC

## **Ensure Service Quality**

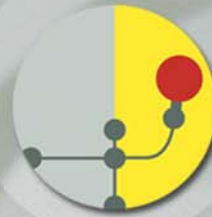
- Fast and accurate line test results – resolve service complaints quickly
- Accurate cross-connect database

## **Increase in Revenue**

- Quicker service provisioning equals earlier/more revenue

## **Supports New Service Introduction**

- Automated system enables use in street cabinets, shortening the local loop for e.g. VDSL



# Simpler Networks

## Thank you for your time!